

Focus. . . Mortality Differences Between Metropolitan Statistical Areas and Non-Metropolitan Statistical Areas

This study reviews mortality differences between metropolitan statistical areas and non-metropolitan statistical areas in two five-year periods (1987- 1991 and 1992 - 1996). A metropolitan statistical area (MSA) consists of a central city of 50,000 population or more, and the county in which it is located; it may also include adjacent counties/communities that have a high degree of economic and social interaction with the center-city area. Missouri has six metropolitan statistical areas, which include 22 counties, 19 percent of all Missouri counties (115).

To get the age adjusted death rates for these two five-year periods, middle year population data were used, i.e. 1989 and 1994. Population composition shows the similar characteristics during the two time periods, with 68 percent of the total population living in MSAs and 32 percent in non-MSAs; fewer working age adults and more elderly living in non-MSAs.

In general, non-metropolitan statistical areas have an older population, lower socioeconomic levels, and fewer health care services. Socioeconomic status in non-metro counties compares unfavorably with metro counties: the unemployment rate for non-MSAs in 1997 was 5.3 percent while for MSAs that was 3.6 percent; per capita income in non-metro areas was \$15,640 in 1994, but in metro areas it was \$23,030, with a difference of \$7,390; non-metro counties had 32 percent of the total state population, but 43 percent of the Missourians with income below 200 percent poverty level (1990 census). In terms of health care infrastructure, non-metro counties are in a disadvantageous position, too. Of the total staffed hospital beds, 75 percent are in metro counties, 25 percent in non-metro counties. On the average, every 1,000 population in MSAs have 5.3 staffed hospital beds, while every 1,000 people in non-MSAs have only 3.7. Non-metro areas have 32 percent of the total state population, but 15 percent of the total physicians. The difference is more apparent using physician to population ratio, with 28 physicians per 10,000 population in metro counties, and only 10 physicians per 10,000 population in non-metro counties.

Mortality in MSAs and Non MSAs in 1992-1996

In 1992-1996, non-metropolitan statistical areas had a slightly higher age adjusted death rate when all causes of death were considered (MSAs 523.2 per 100,000 population vs. non-MSAs 530.6). Table 1 shows that all differences but one in leading causes of death between metro and non-metro counties are statistically significant at 95 percent confidence level. The first five leading causes of death appear in the same rank order for both MSAs and non-MSAs; diseases of heart and malignant neoplasms are the main killers, followed by accidents, cerebrovascular disease, and chronic pulmonary disease. With these five causes, people living in non-metro areas have higher age adjusted death rates in all except one (malignant neoplasms). Accidental deaths show the most notable disparity with a difference of 34.8 percent between MSAs and non-MSAs. Within the accidental mortalities, half (50.2 percent) are motor vehicle deaths and the disparity is even bigger (45.8 percent) between metro and non-metro Missourians in this cause, which may be attributed to poor roads, lack of seatbelt use and distance to trauma center.

Of all the leading causes of death, the most dramatic disparity between metro and non-metro areas is death due to AIDS, with the rate for MSAs nearly three times higher than in non-MSAs. Homicide and legal intervention is the second sharpest contrast (175.7 percent difference), which is the sixth leading cause of death for MSAs, while the number ten for non-MSAs. The smallest difference between the two areas is found in malignant neoplasms.

Mortality in MSAs and Non-MSAs by Gender in 1992-1996

The differences between MSAs and non-MSAs are also evident when gender is considered. Table 2

displays the 12 leading causes of death by MSA status and by gender in 1992-1996. Missouri males in both MSAs and non-MSAs have higher age adjusted death rates in almost all causes than their female counterparts. Heart diseases and cancer are the leading causes of death for all subgroups. However, the rank order for MSAs females is different from other subgroups, i.e. cancer is the number one killer, and heart diseases is the number two. Men living in non-MSA areas have the highest death rate of heart diseases (217.2 per 100,000 population), while men living in MSAs have the highest death rate of cancer (169.3 per 100,000 population).

The most obvious disparities among the four subgroups are deaths due to AIDS, and homicide and legal intervention. Metro men have much higher death rates in these two causes, which, in turn, explains the higher AIDS, and homicide and legal intervention mortality rates in metro areas. Men living in metro areas have an AIDS death rate 3.2 times higher than men living in non-metro areas, 14.8 times higher than metro women, and 33.3 times higher than non-metro women. Mortality by diabetes mellitus is much higher for men living in metro counties than other subgroups. For non-metro Missourians, the accidental death rate is much higher, especially for males, whose death rate is 33.7 percent higher than MSAs males, 149.4 percent higher than MSA females, and 63.7 percent higher than non-MSA females. Non-metro males also have higher age adjusted death rates in chronic pulmonary disease and suicide. For metro and non-metro women, even though the difference in all causes of death is not statistically significant, the disparities in most leading causes of death are. However, the differentials are not as dramatic as those between their male counterparts.

Changes from 1987-1991 to 1992-1996

Overall health status for Missourians improved slightly from the first five-year period to the second, which is reflected in the declined rate of all causes of death for the state, from 528.4 deaths per 100,000 population in 1987-1991 to 525.9 deaths in 1992-1996. Table 3 shows the changes in the 12 leading causes of death, comparing two time frames by MSA status. MSAs decreased in half of the 12 leading causes of death, with three of them being statistically significant at 95 percent confidence level. The biggest decline is in diseases of heart, with the age adjusted death rate decreasing from 160 deaths per 100,000 population to 148 deaths per 100,000 population. Mortalities by malignant neoplasms and suicide declined too. However, MSAs also experienced an increase in certain leading causes of death, including AIDS, diabetes mellitus, homicide and legal intervention, chronic pulmonary disease, and pneumonia and influenza. AIDS is the most notable.

In non-metro counties, the scenario is quite different. Of the 12 leading causes of death, only heart diseases showed a decline. The most obvious change is death due to AIDS, which nearly doubled (94.3 percent) from the first five-year to the second. Diabetes mellitus, and homicide and legal intervention are the two causes with more than 10 percent increases. Increases in mortality rates by chronic pulmonary disease, malignant neoplasms, and pneumonia and influenza are statistically significant, too.

Conclusion

From 1987-1991 to 1992-1996, overall health status of Missourians improved, but the gaps between metro and non-metro areas widened. MSAs experienced decreases in six of the 12 leading causes of death, while non-MSAs showed a decrease for only one of the twelve leading causes. Generally, people living in metro counties are healthier than their non-metro counterparts. Of the four subgroups, non-metro men are the most vulnerable, having the highest age adjusted death rates in most leading causes of death.

Although there is no simple explanation for the differentials in health status between MSAs and non-MSAs, there are some factors worth highlighting. Metro counties have higher income and lower poverty rates than non-metro counties. Non-MSAs have a higher proportion of elderly but lower proportion of physicians and fewer staffed hospital beds.

Table 1
Age-Adjusted Death Rates for Leading Causes of Death by MSA Status: Missouri 1992-1996

(Rate Per 100,000 Population)					Percent Difference
Cause	MSA	Rank	Non-MSA	Rank	
Diseases of Heart	148.1	1	161.5	1	-8.3%*
Malignant Neoplasms	138.3	2	135.2	2	2.3%*
Accidents	29.6	3	45.3	3	-34.8%*
Cerebrovascular Disease	26.9	4	29.9	4	-9.9%*
Chronic Pulmonary Disease	22.8	5	23.4	5	-2.5%
Homicide & Legal Intervention	14.2	6	5.1	10	175.7%*
Pneumonia & Influenza	14.0	7	14.7	6	-4.8%*
Diabetes Mellitus	12.9	8	11.3	8	14.0%*
Suicide	12.3	9	13.4	7	-8.5%*
AIDS	10.7	10	2.7	12	293.3%*
Liver Disease & Cirrhosis	6.1	11	5.3	9	15.0%*
Nephritis & Nephrosis	4.4	12	4.9	11	-10.7%*
All Causes of Death	523.2		530.6		-1.4%
					*

1940 U.S. population used as standard.
* Rates are significantly different at .05 level.

Table 2
Age-Adjusted Deaths Rates for Leading Causes of Death by MSA Status and by Gender: Missouri 1992-1996

(Rate Per 100,000 Population)										
Cause	Male					Female				
	MSAs	Rank	Non-MSAs		Percent Difference	MSAs	Rank	Non-MSAs		Percent Difference
			Rate	Rank				Rate	Rank	
Diseases of Heart	198.5	1	217.2	1	-8.6%*	109.3	2	114.6	1	-4.6%*
Malignant Neoplasms	169.3	2	169.1	2	0.1%	116.7	1	108.7	2	7.4%*
Accidents	42.9	3	64.7	3	-33.7%*	17.2	5	26.2	4	-34.4%*
Cerebrovascular Disease	29.4	4	31.5	5	-6.7%*	25.0	3	28.5	3	-12.3%*
Chronic Pulmonary Disease	29.3	5	32.9	4	-11.0%*	18.9	4	16.6	5	13.9%*
Homicide & Legal Intervention	23.3	6	7.1	10	229.8%*	5.3	8	3.2	10	65.6%*
Suicide	21.0	7	23.4	6	-10.3%*	4.3	9	3.8	9	13.2%

AIDS	20.6	8	4.8	12	327.3%*	1.3	12	0.6	12	116.7%*
Diabetes Mellitus	19.1	9	11.2	8	71.4%*	11.5	6	11.3	7	1.8%
Pneumonia & Influenza	18.0	10	18.9	7	-4.6%	11.5	7	11.7	6	-1.7%
Liver Disease & Cirrhosis	9.1	11	8.2	9	10.5%	3.5	11	2.7	11	29.6%*
Nephritis & Nephrosis	5.6	12	6.0	11	-5.6%	3.6	12	4.2	8	-12.2%*
All Causes	679.5		688.0		-1.2%*	399.4		396.7		0.7%

1940 U.S. population used as standard.
 * Rates are significantly different at .05 level.

Table 3
Age-Adjusted Death Rates for Leading Causes of Death by MSA Status: Missouri 1987-1991 and 1992-1996

<i>Causes</i>	<i>MSAs</i>			<i>Non-MSAs</i>		
	<i>Percent Difference</i>			<i>Percent Difference</i>		
	<i>1987-1991</i>	<i>1992-1996</i>		<i>1987-1991</i>	<i>1992-1996</i>	
Diseases of Heart	160.1	148.1	-7.5%*	164.4	161.5	-1.7%*
Malignant Neoplasms	140.9	138.3	-1.8%*	130.8	135.2	3.3%*
Accidents	30.4	29.6	-2.7%	44.7	45.3	1.4%
Cerebrovascular Disease	27.5	26.9	-2.2%	29.8	29.9	0.2%
Chronic Pulmonary Disease	21.2	22.8	7.7%*	21.6	23.4	8.4%*
Homicide & Legal Intervention	12.0	14.2	18.0%*	4.5	5.1	14.1%
Pneumonia & Influenza	13.1	14.0	7.1%*	14.0	14.7	5.2%*
Diabetes Mellitus	10.8	12.9	19.1%*	9.3	11.3	21.3%*
Suicide	12.6	12.3	-2.5%	13.0	13.4	3.2%
AIDS	6.2	10.7	72.6%*	1.4	2.7	94.3%*
Liver Disease & Cirrhosis	6.7	6.1	-8.4%*	4.9	5.3	8.9%
Nephritis & Nephrosis	4.4	4.9	11.6%	4.5	4.9	8.0%
All Causes of Death	530.8	523.2	-1.4%*	525.3	530.6	1.0%*

1940 U.S. population used as standard.
 * Rates are significantly different at .05 level.

Provisional Vital Statistics for May 1998

Live births decreased in May as 5,512 Missouri babies were born compared with 5,902 in May 1997.

Cumulative births decreased for the five months ending with May, but increased for the 12 months ending with May. For the first five months of 1998, births decreased by 1.7 percent from 31,198 to 30,679.

Deaths decreased in May as 3,460 Missourians died compared with 4,270 one year earlier. Cumulative deaths for the 5- and 12-month periods ending with May also decreased.

The Natural increase in May was 2,052 (5,512 births minus 3,460 deaths). This compares to a natural increase of 1,632 in May 1997.

Marriages decreased for all three time periods shown below. The marriage to divorce ratio for the 12 months ending with May decreased from 1.79 in 1997 to 1.66 in 1998.

Infant deaths decreased for all three time periods shown below. For the first five months of 1998, the infant death rate decreased from 8.5 for the comparable period in 1997 to 8.3 per 1,000 live births.

PROVISIONAL RESIDENT VITAL STATISTICS FOR THE STATE OF MISSOURI

Item	May		Jan. - May cumulative						12 months ending with May				
	Number		Rate*		Number		Rate*		Number		Rate*		
	1997	1998	1997	1998	1997	1998	1997	1998	1997	1998	1996	1997	1998
Live Births	5,902	5,512	13.8	11.9	31,198	30,679	14.1	13.6	73,149	74,062	13.8	13.6	13.7
Deaths	4,270	3,460	9.9	7.5	24,360	22,752	11.0	10.1	54,115	53,230	10.2	10.1	9.8
Natural increase	1,632	2,052	3.8	4.4	6,838	7,927	3.1	3.5	19,034	20,832	3.6	3.5	3.8
Marriages	4,884	3,549	11.4	7.7	15,586	14,252	7.1	6.3	45,333	42,478	8.3	8.4	7.8
Dissolutions	2,169	2,144	5.1	4.6	10,498	10,453	4.8	4.6	25,256	25,575	4.8	4.7	4.7
Infant deaths	46	41	7.8	7.4	266	254	8.5	8.3	590	556	7.4	8.1	7.5
Population base (in thousands)	...	...	5,402	5,440	...	...	5,402	5,440	...	...	5,341	5,379	5,417

*Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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